

Authorized-Services Manager under OS/390

This document describes functionality and operation of the Authorized-Services Manager (ASM) which is available with Natural under OS/390. It covers the following topics:

- ASM Overview
- ASM System Requirements
- ASM Operation

OS/390 Environment - Other Topics

Natural under OS/390 | Shared Natural Nucleus | Natural Roll Server Functionality | Natural Roll Server Operation

ASM Overview

The Authorized-Services Manager (ASM) provides authorized operating system functions to Natural. These functions include writing SMF records and Parallel Sysplex communication through the Coupling Facility (CF). The ASM provides its functions via PC routines and runs in its own address space.

The following authorized functions are provided:

- communicating Natural buffer pool administration messages,
- writing SMF records;
- holding Natural session information in the Session Information Pool (SIP).

The first two functions are always available, whereas the SIP is optional and can be made available via startup parameter. For more information on starting the ASM see Starting the ASM.

You must use the ASM in the following cases:

- The Natural profile parameter BPPROP is set to PLEX or GLOBAL or GPLEX (buffer pool propagation is used);
- Natural under CICS is used in a Parallel Sysplex (with the SIP function);
- Natural under IMS/TM is used in terminal-oriented, non-conversational mode (with the SIP function);
- Natural under IMS/TM is used, with the Accounting function writing SMF records.

The Session Information Pool (SIP) holds the Natural session information records. In terminal-oriented non-conversational mode, the NCI and NII interfaces need these records to continue a Natural session after a terminal I/O. When running in a Parallel Sysplex, the SIP is created in the CF and a data space is used as an intermediate buffer to avoid unnecessary access to the CF. Otherwise, the SIP is created in a data space.

If the ASM is used in a Parallel Sysplex, one ASM instance must be started in each participating OS/390 image.

Note concerning Natural/CICS: The CICS System Recovery Table should include the OS/390 system abend code 0D6.

Note concerning the non-conversational Natural IMS/TM Interface:

If you want to use the Natural IMS/TM Interface Version 4.1 together with the Natural IMS/TM interface 3.1 in the same IMS/TM MPP environment, you must use the Authorized Services Manager Version 4.1 for storing the simulated SPA. The following steps are required after you have installed base Natural Version 4.1:

- Copy the module NATAU31B to the APF authorized library used by the Authorized Services Manager.
- Start the Authorized Services Manager for the subsystem identified by the Natural/IMS profile parameter SPATID.

The Authorized Services Manager will issue a message to indicate that the service is also established for a version prior to Natural Version 4.1.

Please keep in mind that all non-conversational Natural sessions in the same IMS/TM environment must use the same value for SPATID.

ASM System Requirements

- APF Authorization
- System Linkage Index (System LX)
- CF Structure
- XCF Signalling Paths

APF Authorization

Link the modules NATASM41 and NATBPMGR to an Authorized Program Facility (APF) library, specifying IEWL parameter AC(1). Refer to Installation Procedure for Natural under OS/390, Step 1.

If you use the non-conversational Natural IMS/TM Interface, also copy module NATAU31B to this library (Please refer to the Note concerning the non-conversational Natural IMS/TM Interface, above).

System Linkage Index

As the ASM reserves one system linkage index (System LX), check whether there is a high enough value of NSYSLX in member IEASYSxx of library SYS1.PARMLIB.

Note:

If you terminate the ASM, the address space ID is no longer available because a System LX has been used. It becomes available again with the next IPL.

CF Structure

A CF structure is only used if you run the SIP in a Parallel Sysplex. The space required can be calculated using the following formula:

$$30 \text{ KB} + (\text{SIP slot size in bytes} + 165) * (\text{number of SIP slots} + 8)$$

For 500 SIP slots of 512 bytes each, define:

```
STRUCTURE NAME(NATASM) SIZE(380) PREFLIST(CF1)
```

XCF Signalling Paths

To propagate buffer pool administration messages in a Parallel Sysplex, the XCF Signalling Services are used. The minimum message is 64 bytes long, the maximum is 2048 bytes. How often messages are sent depends on how often Natural objects are manipulated (with the CATALOG, STOW or DELETE system command).

ASM Operation

- Starting the ASM
- ASM Messages, Condition Codes and Abend Codes
- ASM Operator Commands

Starting the ASM

You start the ASM either as a batch job or as a started task by executing module NATASM41. On the JCL EXEC statement, specify as PARM the following parameters:

subsystem-id, XCF-group-name, CF-structure-name, number-of-SIP-slots, SIP-slot-size

All parameters are positional and must be separated by a comma; they are explained in the table below:

Parameter	Possible Values	Default	Comment
subsystem-id	4-byte non-blank string	NAT4	The specified value must match the value of the Natural profile parameter SUBSID. Note: With Natural under CICS, refer to the CICSPLX parameter in the NCMDIR macro for setting the appropriate subsystem ID.
XCF-group-name	any valid XCF group name	none	The name of the XCF group for signalling services.
CF-structure-name	any valid CF structure name	none	Optional, only needed if SIP is used. The name of the CF structure used for the SIP function.
number-of-SIP-slots	1 - 32767	none	Optional, only needed if SIP is used. The number of slots to be allocated if the CF structure has not yet been allocated. If omitted or specified as 0, the entire structure will be used for as many slots as it can hold.
SIP-slot-size	256, 512, 1024, 2048, 4096	1024	The specified value is ignored if a CF structure has already been allocated.

Examples:

```
//ASM EXEC PGM=NATASM41,PARM='NAT4,NATXCF,CFSIP,1500,512'
```

The subsystem ID is NAT4, the message group for buffer pool communication is NATXCF, the structure for the Session Information Pool is CFSIP. 1500 SIP slots are to be used, each having a size of 512 bytes.

```
//ASM EXEC PGM=NATASM41,PARM='NAT4,NATXCF,CFSIP'
```

Same as above, except SIP slots:

The ASM will use as many SIP slots as the CFSIP structure can hold, each having a size of 1024 bytes.

```
//ASM EXEC PGM=NATASM41,PARM='NAT4,NATXCF,,500,512'
```

The SIP service is not to use the Coupling Facility, but to build 500 SIP slots in storage, each having a size of 512 bytes.

```
//ASM EXEC PGM=NATASM41,PARM='NAT4,NATXCF'
```

The SIP service will not be available.

ASM Messages, Condition Codes and Abend Codes

The ASM writes informational and error messages to JESMSG LG using the WTO macro (ROUTCDE=11). The messages are preceded by a message identifier and the ASM's job name, for example:

ASM0005 FBASM41 : Authorized Services Manager Version 411 is active

The following condition codes are used:

0	Normal completion
12	Wrong parameter input
16	Runtime error has occurred
20	Subtask has failed
24	Abend has occurred
>100	Working storage could not be allocated

The following user abend codes are used:

Abend Code	Reason	Comment
100	IXCJOIN failed.	Abend Register 14 contains the reason code.
101	IXCQUERY failed.	Abend Register 14 contains the reason code.
103	Active member list full.	Contact Software AG Support.
104	IXCMSGI failed.	Abend Register 14 contains the reason code.
105	Message Exit could not obtain a Purge Task Request Block.	Contact Software AG Support.
106	Work Space for IXLCONN could not be obtained.	Contact Software AG Support.
2xx	DSPSERV CREATE failed.	xx is the reason code.
3xx	ALESERV ADD failed.	xx is the reason code.
4xx	ALESERV ADD failed.	xx is the reason code.
5xx	IXLCONN failed.	xx is the reason code.
6xx	IXLLIST WRITE failed.	xx is the reason code.

To find a description of reason codes, refer to **Programming: Sysplex Services Reference** (IBM documentation). If the error was environment-specific, and it is not clear what the reason was, contact Software AG Support.

ASM Operator Commands

The following commands can be passed to the ASM using the MODIFY command:

Command	Description
TERM	Terminates the ASM.
TRSTART	Debugging function, only to be used at Software AG's advice. Activates the Trace Task. If the GTF is started and enabled for User Records 202, the trace records are written to the GTF.
TRSTOP	Deactivates the Trace Task.
SNAP	Debugging function. The ASM's address space is dumped to SYSUDUMP.

For a list of return codes and reason codes of the SIP Service, refer to SIP Service Return Codes and Reason Codes (in the Messages and Codes documentation).